

Claims

1. Emergency situation detection apparatus comprising:
a stress input unit for receiving body stress information from a subject,
a physical input unit for receiving body physical reaction data from said subject,
a comparator unit, associated with said stress input unit and said physical input unit, for comparing stress level information and physical reaction data, to detect substantially simultaneous stress level change and a physical reaction in said subject,
said apparatus being operable to threshold said simultaneous detection to infer the presence of an emergency situation and to enter an alarm state.
2. Emergency situation detection apparatus according to claim 1, wherein said thresholding is a thresholding of said changes.
3. Emergency situation detection apparatus according to claim 1, configured for attachment to said subject.
4. Emergency situation detection apparatus according to claim 1, configured for attachment to the trunk region of a user, above the hip region.
5. Emergency situation detection apparatus according to claim 1, wherein said stress level information comprises pulse rate information.
6. Emergency situation detection apparatus according to claim 1, wherein said stress level information comprises breathing rate information.
7. Emergency situation detection apparatus according to claim 1 wherein said stress level information is sweat level information.

8. Emergency situation detection apparatus according to claim 1, configured to interpret extremely low stress level information as said subject being in a state of sleep.

9. Emergency situation detection apparatus according to claim 1, wherein said physical input unit comprises an inclination detector affixed to said subject.

10. Emergency situation detection apparatus according to claim 1, wherein said physical input unit comprises an accelerometer.

11. Emergency situation detection apparatus according to claim 1, wherein said input unit is responsive to transmitter units placed on said subjects.

12. Emergency situation detection apparatus according to claim 1, wherein said alarm state comprises automatic opening of a communication channel to a central controller.

13. Emergency situation detection apparatus according to claim 1, wherein said alarm state comprises automatic opening of an audio channel to a central controller.

14. Emergency situation detection apparatus according to claim 13, wherein an end of said audio channel is located on said subject.

15. Emergency situation detection apparatus according to claim 1, wherein said alarm state comprises automatic opening of a video link to a central controller.

16. Emergency situation detection apparatus according to claim 1, said alarm state being additionally triggerable by at least one of an instability monitor, and a loud sound monitor.

17. Emergency situation detection apparatus according to claim 1, sized and configured for mounting unobtrusively on a subject.

18. Emergency situation detection apparatus according to claim 1, further comprising location detection functionality for determining a location, said apparatus further being configured to report said location.

19. Emergency situation detection apparatus according to claim 18, wherein said location detection functionality is one of a group comprising a GPS detector and a triangulation system.

20. Emergency situation detector according to claim 1, further comprising a direction sensor, said direction sensor comprising a compass needle and functionality for measuring an angle of said compass needle in relation to a reference.

21. Emergency situation detector according to claim 1, associated with a memory stack for storing a predetermined amount of immediately preceding data, said detector being configured to save all data in said stack upon entry into said alarm state.

22. Emergency situation detection method comprising:
receiving body stress level information from a subject,
receiving body physical reaction data from said subject,
comparing stress level information and physical reaction data, to detect substantially simultaneous stress level change and physical reaction in said subject, and

thresholding said simultaneous detection to infer the presence of an emergency situation and to enter an alarm state.

23. The method of claim 22, wherein said thresholding comprises thresholding of rates of change.

24. The method of claim 22, wherein said stress level information comprises pulse rate information.

25. The method of claim 22, wherein said stress level information is breathing rate information.

26. The method of claim 22 wherein said stress level information is sweat level information.

27. The method of claim 22 wherein said physical reaction data is body angular inclination data.

28. The method of claim 22, wherein said physical reaction data is body acceleration data.

29. The method of claim 22, comprising being responsive to transmitter units placed on said subject.

30. The method of claim 22, wherein said alarm state comprises automatic opening of a radio link to a central controller.

31. The method of claim 22, wherein said alarm state comprises automatic opening of a video link to a central controller.

32. A system comprising rule based logic and at least one body sensor for location on a subject, the subject being expected to follow certain behavioral rules, said at least one sensor being usable in combination with said rule based logic to detect non-compliance with said behavioral rules, thereby to indicate an abnormal situation.

33. The system of claim 32, further comprising at least a second body sensor usable in combination with said behavioral rules.

34. The system of claim 32, wherein said events include said user sleeping or dozing when he is not expected to.

35. The system of claim 32, wherein said events include said user walking when expected to be stationary or being stationary when expected to be walking.

36. The system of claim 32, wherein said behavioral rules define expected attitudes of user body positions.

37. The system of claim 32, wherein said behavioral rules define places where said user is expected to be located and where said user is expected not to be located.

38. The system of claim 32, wherein said behavioral rules include expected behaviors following major impacts.

39. The system of claim 32, further comprising a location detection device and wherein said rule based logic contains rules based on location.

40. The system of claim 32, being programmable to allow dynamic changing of said rules.

41. A direction sensor for mounting on a mobile body, said direction sensor comprising a compass needle and functionality for measuring an angle of said compass needle in relation to a reference, said direction sensor being configured for mounting in orientation fixed manner on said mobile body.

42. The direction sensor of claim 41, wherein said mobile body is a person, said direction sensor being configured for mounting on a part of said person indicative of a direction that said person is facing.

43. Emergency situation detection apparatus comprising:
a physiological input unit for receiving body physiological information from a subject,
a physical input unit for receiving body physical reaction data from said subject,
a logic unit, associated with said physiological input unit and said physical input unit, for applying at least one logical operation simultaneously to said physiological information and said physical information, to infer the presence of an emergency situation and to enter an alarm state.

44. Emergency situation detection apparatus according to claim 43, configured for attachment to said subject.

45. Emergency situation detection apparatus according to claim 44, configured for attachment to the trunk region of a user, above the hip region.

46. Emergency situation detection apparatus according to claim 43, wherein said physiological level information comprises pulse rate information.

47. Emergency situation detection apparatus according to claim 43, wherein said physiological level information comprises breathing rate information.

48. Emergency situation detection apparatus according to claim 43 wherein said physiological level information is sweat level information.

49. Emergency situation detector according to claim 43, wherein said physiological information is data indicating whether a user is asleep.

50. Emergency situation detection apparatus according to claim 43, wherein said physical input unit comprises an inclination detector affixed to said subject.

51. Emergency situation detection apparatus according to claim 43, wherein said physical input unit comprises an accelerometer.

52. Emergency situation detection apparatus according to claim 43, wherein said input unit is responsive to transmitter units placed on said subjects.

53. Emergency situation detection apparatus according to claim 43, wherein said alarm state comprises automatic opening of a communication channel to a central controller.

54. Emergency situation detection apparatus according to claim 43, wherein said alarm state comprises automatic opening of an audio channel to a central controller.

55. Emergency situation detection apparatus according to claim 54, wherein an end of said audio channel is located on said subject.

56. Emergency situation detection apparatus according to claim 43, wherein said alarm state comprises automatic opening of a video link to a central controller.

57. Emergency situation detection apparatus according to claim 43, said alarm state being additionally triggerable by at least one of an instability monitor, and a loud sound monitor.

58. Emergency situation detection apparatus according to claim 43, sized and configured for mounting unobtrusively on a subject.

59. Emergency situation detection apparatus according to claim 43, further comprising location detection functionality for determining a location, said apparatus further being configured to report said location.

60. Emergency situation detection apparatus according to claim 59, wherein said location detection functionality is one of a group comprising a GPS detector and a triangulation system.

61. Emergency situation detector according to claim 43, further comprising a direction sensor, said direction sensor comprising a compass needle and functionality for measuring an angle of said compass needle in relation to a reference.

62. Emergency situation detector according to claim 43, associated with a memory stack for storing a predetermined amount of immediately preceding data, said detector being configured to save all data in said stack upon entry into said alarm state.

63. Emergency situation detector
according to claim 1 wherein said indication of an alarm
state comprises any of an impact, an impact causing a
subject to falling down, and an impact causing
physiological readings to change.

64. Emergency situation detector
according to claim 22 wherein said indication of an alarm
state comprises any of an impact, an impact causing a
subject to falling down, and an impact causing
physiological readings to change.

65. Emergency situation detector
according to claim 32 wherein said indication of an alarm
state comprises any of an impact, an impact causing a
subject to fall down, and an impact causing physiological
readings to change.

66. Emergency situation detector according to claim 43 wherein said
indication of an alarm state comprises any of an impact, an impact causing a
subject to fall down, and an impact causing physiological readings to change.

67. Emergency situation detection apparatus according to any one of
the preceding claims, wherein an additional detector is located on a wall of a
vehicle carrying a subject, so as to cancel out vibrations of said vehicle.

68. Central co-ordination unit for controlling a plurality of remotely
located emergency situation detectors, each detector comprising:
a stress input unit for receiving body stress information from a subject,
a physical input unit for receiving body physical reaction data from said
subject,

a comparator unit, associated with said stress input unit and said physical input unit, for comparing stress level information and physical reaction data, to detect substantially simultaneous stress level change and a physical reaction in said subject,

said apparatus being operable to threshold said simultaneous detection to infer the presence of an emergency situation and to enter an alarm state,

said co-ordination unit comprising an alarm unit for indicating that one of said detectors has entered an alarm state and a contact unit for contacting and providing a location of said one of said detectors having entered said alarm state.

69. Central co-ordination unit for controlling a plurality of remotely located emergency situation detectors, each detector comprising:

a physical input unit for receiving body physical reaction data from said subject,

said apparatus being operable to threshold said detection to infer the presence of an emergency situation and to enter an alarm state,

said co-ordination unit comprising an alarm unit for indicating that one of said detectors has entered an alarm state and a contact unit for contacting and providing a location of said one of said detectors having entered said alarm state.